

The nucleotide coding sequence (SEQ ID NO:1) and amino acid sequence (SEQ ID NO:2) of bovine lysozyme

atg	aag	gct	ctc	gtt	att	ctg	ggg	ttt	ctc	ttc	ctt	tct	gtc	gct
M	F	A	L	V		L	G	I	L	F	L	S	V	A
gtc	caa	ggc	aag	gtc	ttt	gag	aga	tgt	gag	ctt	gcc	aga	act	ctg
V	Q	G	K	V	F	E	R	C	E	L	A	R	T	L
aag	aaa	ctt	gga	ctg	gac	ggc	tat	aag	gga	gtc	agc	ctg	gca	aac
K	K	L	G	L	D	G	Y	K	G	V	S	L	A	H
tgg	ttg	tgt	ttg	acc	aaa	tgg	gaa	agc	agt	tat	aac	aca	aaa	gct
W	L	C	L	T	K	W	E	S	S	Y	N	T	K	A
aca	aac	tac	aat	cct	agc	agt	gaa	agc	act	gat	tat	ggg	ata	ttt
			T				A			L	A	T	L	
cag	atc	aac	agc	aaa	tgg	tgg	tgt	aat	gat	ggc	aaa	acc	cct	aat
Q	I	N	S	K	W	W	C	N	D	G	K	T	P	N
gca	gtt	gac	ggc	tgt	cat	gta	tcc	tgc	agc	gaa	tta	atg	gaa	aat
A	V	D	G	C	H	V	G	C	S	E	L	M	E	N
gac	atc	gct	aaa	gct	gta	gcg	tgt	gca	aag	cat	att	gtc	agt	gag
L	I	A	K	A		A	T	A	K	F	L	T		
caa	ggc	att	aca	gcc	tgg	gtg	gca	tgg	aaa	agt	cat	tgt	cga	gac
Q	G	L	T	A	W	V	A	W	K	S	H	C	R	D
cat	gac	gtc	agc	agt	tac	gtt	gag	ggt	tgc	acc	ctg	taa		
H	D	V	S	S	Y	V	E	G	C	T	L	*		

FIG. 2 (sheet 1 of 4)

Nucleotide sequence of the plasmid p1044-BolLys

(extends from nucleotides 5767 – 6211 of the viral vector; the sequence encoding bovine lysozyme, including the stop codon, is inserted as a PacI-XhoI fragment and is shown in lower case letters, underscored)

GTATTTTAC AACAAATTACC AACAAACAACA AACAAACAGAC AACATTACAA TTACTATTTA CAATTACAAAT GGCATACACA CAGACAGCTA  
CCACATCAGC TTGCTGGAC ACTGTCCGAG GAAACAACCTC CTGGTCAAT GATCTAGCAA AGCGTGGTCT TTACACACA GCGGTGAAG  
AGTTTAAACG TCGTGACCG AGGCCAAGG TGAACCTTTC AAAAGTAATA AGCAGGAGC AGACGTTAT TGCACCCGG GCGTATCCAG  
AATTCCAAAT TACATTTTAT AACACGCAA ATGCCGTGCA TTGCTTGA GGTGATTGC GATCTTAGA ACTGGAATAT CTGATGATGC  
AAATTCCTTA CGGATCATTG ACTTATGACA TAGGCGGAA TTTGTCATCG CATCTGTTCA AGGAAGAGC ATATGTACAC TGCTGCATGC  
CCAACTGGA CGTTCGAGC ATCATGCGC ACGAAGGCCA GAAAGACAGT ATTGAACAT ACCTTCTAG GCTAGAGAGA GGGGGAAGA  
CAGTCCCCAA CTTCCAAAAG GAAGCATTTG ACAGATACGC AGAAATTCCT GAAGACGCTG TCTGTACAA TACTTCCAG ACATGCGAAC  
ATCAGCCGAT GCAGCAATCA GGCAGAGTGT ATGCCATTGC GCTACACAGC ATATATGACA TACCAGCCGA TGAGTCCGG GCGGCACTCT  
TGAGGAAAAA TGTCATACG TGCTATGCC CTTTCCACTT CTCCGAGAAC CTGCTTCTTG AAGATTCATG CGTCAATTG GACGAATCA  
ACGCGTGTTC TTGCGCGAT GGAGACAAGT TGACCTTTTC TTTGTCATCA GAGAGTACTC TTAATTACTG TCATAGTTAT TCTAATATTC  
TTAAGTATGT GTGCAAACT TACTTCCCG CCTCTAATAG AGAGGTTTAC ATGAGGAGT TTTTAGTCAC CAGAGTTAAT ACCTGGTTTT  
GTAAGTTTTT TAGAATAGAT ACTTTTCTTT TGTACAAAGG TGTGGCCCAT AAAAGTGTAG ATAGTAGCA GTTTTATACT GCAATGGAAG  
ACGCATGGCA TTACAAAAG ACTCTTGCAA TGTGCAACAG CGAGAGAATC CTCCTTGAGG ATTCAATAC AGTCAATAC TGGTTTCCCA  
AAATGAGGGA TATGGTCATC GTACCATTTT TCGACATTTT TTTGGAGACT AGTACAGAGA CCGCAGAGA AGTCTTAGTG TCCAAGGATT  
TCGTGTTTAC AGTGCTTAAC CACATTCGAA CATAACAGG GAAAGCTCTT ACATACCCAA AATCTTGT TACAATCCTT GTCCATGACG TTTTACCTGC  
CGAGGGTAAT CATTAACGGT GTGACAGCGA GGTCCGAATG GGATGTGAC AATCTTGT TACAATCCTT GTCCATGACG TTTTACCTGC  
ATACTAAGCT TGCCGTCTTA AAGGATGACT TACTGATTAG CAAGTTTAGT CTCGGTTTCA AACCGGTGTG CCAGCATGTG TGGGATGAGA  
TTTCGCTGGC GTTTGGGAAC GCATTTCCCT CCGTGAAGA GAGGCTTTG AACAGGAAC TTATCAGAGT GGCAGGCGAC GCATTAGAGA  
TCAGGGTGCC TGATCTATAT GTGACCTTCC ACGACAGATT AGTACTGAG TACAAGCCT TGTGAGCCT CTGTGGACAT GCCTGCGCTT GACATTAGGA  
AGAAATGGA AGAAACGGAA GTGATGTACA ATGACTTTT AGAATATCG GTGTTAAGG AGTCTGACAA ATTCGATGTT GATGTTTTT  
CCAGATGTG CCAATCTTTG GAAGTTGACC CAATGACGGC AGCAAGGTT ATAGTCCGG TCATGAGCAA TGAGAGCGGT CTGACTCTCA  
CATTGAACG ACCTACTGAG GCGAATGTTG CGCTAGCTTT ACAGATCAA GAGAAGGTT CAGAAGGTC ATTGGTAGT ACCTCAAGAG  
AAGTTGAAGA ACCGTCCATG AAGGTTTGA TGGCCAGAG AGAGTACAA TTAGCTGCTC TTGCTGGAGA TCATCCGGAA TCGTCCCTAT  
CTAAGAACGA GGAGATAGAG TCCTTAGAGC AGTTTCATAT GGCAGCGCA GATTCTGTA TCGTAAAGCA GATGAGCTG ATTGTGTACA  
CGGCTCCGAT TAAAGTTTCA CAAATGAAAA ACTTTATCGA TAGCTGGTA GCATCACTAT CTGCTGGGT GTCGAATCTC GTCAAGATCC  
TCAAAGATAC AGCTGCTATT GACCTTGAAA CCGCTCAAAA GTTTGGAGTC TTGGATGTTG CATCTAGGAA GTGGTTAATC AAACCAACGG

CCAAAGTCA	TGCATGGGT	GTTGTTGAA	CCCACGGAG	GAAGTATCAT	GTGGCGCTTT	TGGAATATGA	TGAGCAGGT	GTGGTGACAT
GGCATGATTG	GAGAAAGTA	GCTGTAGCT	CTGAGTCTGT	TGTTTATTCC	GACATGGCGA	AACTCAGAAC	TCTGCGCAGA	CTGCTTCGAA
ACGGAGAACC	GCATGTCAGT	AGCGAAAGG	TTGTTCTTGT	GGACGGAGTT	CCGGGCTGTG	GAAAAACCAA	AGAAATCTIT	TCCAGGGTTA
AATTTTGAIG	AGATCTAATT	TTAGTACCTG	GGAAGCAAGC	CGCGAARATG	ATCAGAAAGC	GTGCGAATTC	CTCAGGGGAT	ATTGTGGCCA
CGAAGACAA	CGTTAAAACC	GTTGATCTTT	TCATGATGAA	TTTTTGGGAA	AGCACACGCT	GTGAGTTCAA	GAGGTTATTC	ATTGATGAAG
GGTTTCATGTT	GCATACTGGT	TGTGTTAATT	TTCTTTGGC	GATGTCATTG	TGCGAATTTG	CATATGTTTA	CGGAGACACA	CAGCAGATTC
CATACATCAA	TAGAGTTTCA	GGATTCCCGT	ACCCGCGCCA	TTTTTGCCAAA	TTGGAAGTTG	ACGAGGTGGA	GACACGCAGA	ACTACTCTCC
GTTTGCCAGC	CGATGTCACA	CATTATCTGA	ACAGGAGATA	TGAGGGCTTT	GTCATGAGCA	CTTCTTCGGT	TAAAAAGTCT	GTTTCGCAGG
AGATGTCGG	CGGAGCGGCC	GTGATCAATC	CGATCTCAAA	ACCCTTGCAI	GGCAAGATCC	TGACTTTTAC	CCAATCGGAT	AAAGAAGCTC
TGCTTTCAAG	AGGTATTCCA	GATGTTACACA	CTGTGTCATG	AGTGCAAGGC	GAGACAATCT	CTGATGTTTC	ACTAGTTAGG	TTAAACCCCTA
CACCGTCTC	CATCATTTGCA	GATGATGACC	ATTAGAGACT	TAGTGCATTT	TCAAGGCACA	CCTGTTTCGCT	CAAGTACTAC	ACTGTTGTTA
TGGATCTCTT	AGTTAGTATC	AGTTAGTATC	TTCAAAGGTT	CCAATCTTTT	TTGTCGACGG	CTGATATTTT	CGATGCGAG	ACACAATFAGC
AAATFACAGAT	TGACTCGGTG	CCCAGCAAC	AGCACATGA	TGAATTAATT	TGATGCTGTT	TGACTGACAT	TTCATTGCAI	TTCATAAGATT
ATAAGTGTCT	TATGTTAAG	TCTGTTGCTG	CGCCTAAGGA	TCAAAACAAA	CCACTAATAC	CTATGTTACG	AACGGCGGCA	GAAATGCCAC
GGCAGACTGG	ACTATTGGAA	AATTTAGTGG	CGATGATTAA	AAGAAACTTT	AACGCACCCG	AGTTGTCGG	CATCAATTGAT	ATTGAAAATG
CTGCATCTTT	GGTTGTAGAT	AGTTTTTTTG	ATAGTTATTT	GCTTAAAGAA	AAAAGAAAAC	CAAAATAAAA	TGTTTTCTTG	TTCAGTAGAG
AGTCTCTCAA	TAGATGGTTA	GAAAAGCAGG	AACAGTAAAC	AATAGGCCAG	CTCGCAGATT	TTGATTTTGT	GGATTTGCCA	GCAGTTGATC
AGGTACAGACA	CATGATTTAA	GCACACCCCA	AACAAAAGTT	GGACACTTCA	ATCCAAACGG	AGTACCCGGC	TTTGACAGC	ATTGTGTFACC
ATTCAAAAAA	GATCAATGCA	ATATTCCGCC	CGTTGTTTAG	TGAGCTTACC	AGGCAATTAC	TGGACATGTT	TGATTCGAGC	AGATTTTTGT
TTTTTACAAG	AAAGACACCA	CGCGAGATTG	AGGATTTCTT	CGGAGATCTC	GACAGTCAATG	TGCCGATGGA	TGCTTTGGAG	CTGGATATAT
CAAAATACGA	CAATCTCAG	AATGAATTCC	ACTGTGCAGT	AGAATACAG	ATCTGGCGAA	GATTGGGTTT	CGAAGACTTC	TTGGGAGAG
TTTTGGAACA	AGGGCATAGA	AAGACACCC	TCAAGGATTA	TACCGCAGT	ATAAAAACTT	GCATCTGGTA	TCAAAAGAAAG	AGCGGGGACG
TTTCAGACGTT	CATTGGAAC	ACTGTGATCA	TGCTTGCAATG	TTGGGCTCG	ATGCTTCGCA	TGGAGAAAAT	AATCAAAAGG	GCCTTTTGGC
GTGACCATAG	TCTGTGTAC	TTTTCCAAAG	GTTGTGAGTT	TCCGATGTC	CAACACTCCG	CGAATCTTAT	TGGAATTTTT	GAAGCAAAAC
TGTTTTAAAA	ACAGTATGGA	TACTTTTGGC	GAAGTATGTT	AATACATCAC	GACAGAGGAT	CTCATGTGTA	TTACGATCCC	CTAAAGTTGA
TCTCGAAACT	TGGTGTA	CACATCAAGG	ATTGGGAACA	CTTGGAGAG	TTTCAGAGGT	CTCTTTGCTG	TGTTGCTGTT	TCGTTGAAAC
AATTGTGCGTA	TTACACACAG	TTGGACGACG	CTGTATGGGA	GGTTCAATAAG	ACCGCCCTC	CAGGTTCTGT	TGTTTTATAA	AGTCTGGTGA
AGTATTTGTC	TGATAAGTT	CTTTTTAGAA	GTTTGTATT	AGATGGTCT	AGTTGTTAAA	GGAAAAAGTGA	ATATCAATGA	GTTTTATCAG
CTGCAAAAAA	TTACCGTCG	ATGTTTACC	CTGTAAAGAG	TGTTATGTT	TCCAAAGTTG	ATAAAAATAT	GTTTCAATG	GTTTCAATG
AAATGAGTCAT	TGTCAGGGT	GAACCTCTT	AAAGAGTTA	AGCTTATTGA	TAGTGGATAC	GTCTGTTTAC	CCGGTTTTGT	CGTCACGGG
GAGTGGAACT	TGCCTGACAA	TTGCAGAGGA	GGTGTGACG	TGTGTCTGTT	GGACAAAAGG	ATGAAAAGAG	CCGAGGAGGC	CATTCTCGGA

FIG. 2 (sheet 3 of 4)

TCTTACTACA CAGCAGCTGC AAAGAAAAGA TTTCAGTTCA AGSTCGTTCC CAATTATGCT ATACACACCC AGGACCCGAT GAAAAACGTC  
 TGGCAAGTTT TAGTTAATAT TAGAATATGT AAGATGTCAG CCGGTTTCTG TCCGCTTCT CTGAGTTTG TGTCGGTGTG TATGTTTAT  
 AGAAATAATA TAAATATTAG TTTCGAGAG AAGATTACAA ACCTGAGAGA CGAGGGGCC ATGAACCTTA CAGAGAAGT CGTTGATGAG  
 TTCAATGGAAG ATGTCCTAT GTCGATCAGG CTTCGCAAGT TTCGATCTCG AACGGGAAA AAGAGTGATG TCCGCAAGG GAAAAATAGT  
 AGTAGTGATC GGTCAAGTCC GAACAAGAAC TATAGAAATG TTAAGGATTT TGGGGGAATG AGTTTAAAA AGAATAATTT AATCGATGAT  
 GATTCCGGAGG CTACTGTGCG CGAATCGGAT TCGTTTAAA TAGATCTTAC AGTATCACTA CTCCATCTCA GTTCGTGTTT TTGTCATTAA  
 TTAATAA

atg aag gct ctc gtt att ctg ggg ttt ctc ttc ctt tct gtc gct gtc caa ggc aag gtc ttt gag aga tgt gag  
 ctt gcc aga act ctg aag aaa ctt gga ctg gac ggc tat aag gga gtc gtc aac ctg gca aac tgg ttg tgt ttg acc  
 aaa tgg gaa agc agt tat aac aca aaa gct aca aac tac aat cct agc agt gaa agc act gat tat ggg ata ttt  
 cag atc aac agc aaa tgg tgg tgt aat gat ggc aaa acc cct aat gca gtt gac ggc tgt cat gta tcc tgc agc  
 gaa tta atg gaa aat gac atc gct aaa gct gta gcg tgt gca aag cat att gtc agt gag caa ggc att aca gcc  
 tgg gtg gca tgg aaa agt cat tgt cga gac cat gac gtc agc agt tac gtt gag ggt tgc acc ctg taa

CTCGAGGGGT AGTCAAGATG CATAATAAAT AACGGATTGT GTCCGTAATC ACACGTGGTG CGTAGATAA CGCATAGTGT TTTCCCTCC  
 ACTTAAATCG AAGGTTTGTG TCTTGGATCG CGCGGTCAA ATGTATATGG TTCATATACA TCCGAGGCA CGTAAATAAG CGAGGGGTTT  
 GGGTCGAGGT CGGCTGTGAA ACTCGAAAG GTTCCGGAAG AATGTAAGTG ATGACGAGTC TATCGGTCA TCGAGTACGT TTTAATCAAT  
 TAGTGGTAAG AAAGGTTTGA AAGTTGAGGA AATTGAGGAT AATGTTCCGC TTATGCAGAT CCTGTGCAGC TGATCAATCT GTGTACAAAT  
 ATGCCTTATA CAATCAACTC TCCGAGCCAA TTTGTTTACT TAAGTTCCGC GTATGCGTGC GATGCTGGA AACCTGTGCC TAGTATGACA  
 GCATTGGGTA ACCAGTTTCA AACGCAACAA GCTAGGACAA GCAATTTGCG GTATCCGTTG ATCAGGCGCT TATTAAATAG CTTGATACT  
 GTGAGATTTC CTGCATCGGA TTTCTATGTG TATAGATATA ATTCGACGCT TGATCCGTTG ATCAGGCGCT TATTAAATAG CTTGATACT  
 AGAAATAGAA TAATAGAGGT TGATAATCAA CCCGCACCGA ATACTACTGA AATCGTTAAC GCGACTCAGA GGGTAGACGA TGCAGTGTG  
 GCTATAAGG CTTCAATCAA TAATTTGGCT CTATTGTTGT AATGAACTGG TTCGTGGAAC TGGCATGTTT AATCAAGCAA GCTTTGAGAC TGCATGTGA  
 CTTGTCTGGA CCACAACCTC GGCTACTTAG GTTCGTTCCAC TTAATATATA CGATTGTCAT ATCTGGATCC AACAGTTAAA CCATGTGATG GTGTACTGTG  
 TACCAAAATC AGCAGTGGTT GTTCGTTCCAC TGAAGACTTA AATTCAGGG TGGTGATG TACTGTGG TATGCGTAA AACACGGAG AGGTTCGAAT  
 TGGTATGGCG TAAACAACG GAAAGTCGC TGAAGACTTA AATTCAGGG TGGTGATG TACTGTGG TATGCGTAA AACACGGAG AGGTTCGAAT  
 AAAATAACGA TTGTCATATC TGGATCCAA AGTTAAACCA TGTGATGGT TACTGTGG TATGCGTAA AACACGGAG AGGTTCGAAT  
 CCTCCCTTAA CCGCGGGTAG CGGCCAGGT ACCCGGATGT GTTTCCGGG CTGATGAGTC CGTGAGGACG AACCTGGCT GCAGGATGC  
 AAGCTTGGCG TAATcatggt catAGCTGTT TCCTGTGTGA AATGTTATC CGTCAACAAT TCCACACAAC ATACAGCCG GAAGCATAAA  
 GTGTAAGCC TGGGGTGCCT AATGAGTGAG CTAACCTACA TTAATTGCGT TGGCTCACT GCCGCTTTC CAGTCGGGA ACCTCTCGTG  
 CCAGCTGCAT TAATGAATCG GCCAACGCC GGGGAGAGGC GGTTCGCTA TTGGCGCTCC TCGCTCACTG ACTCGCTGCG



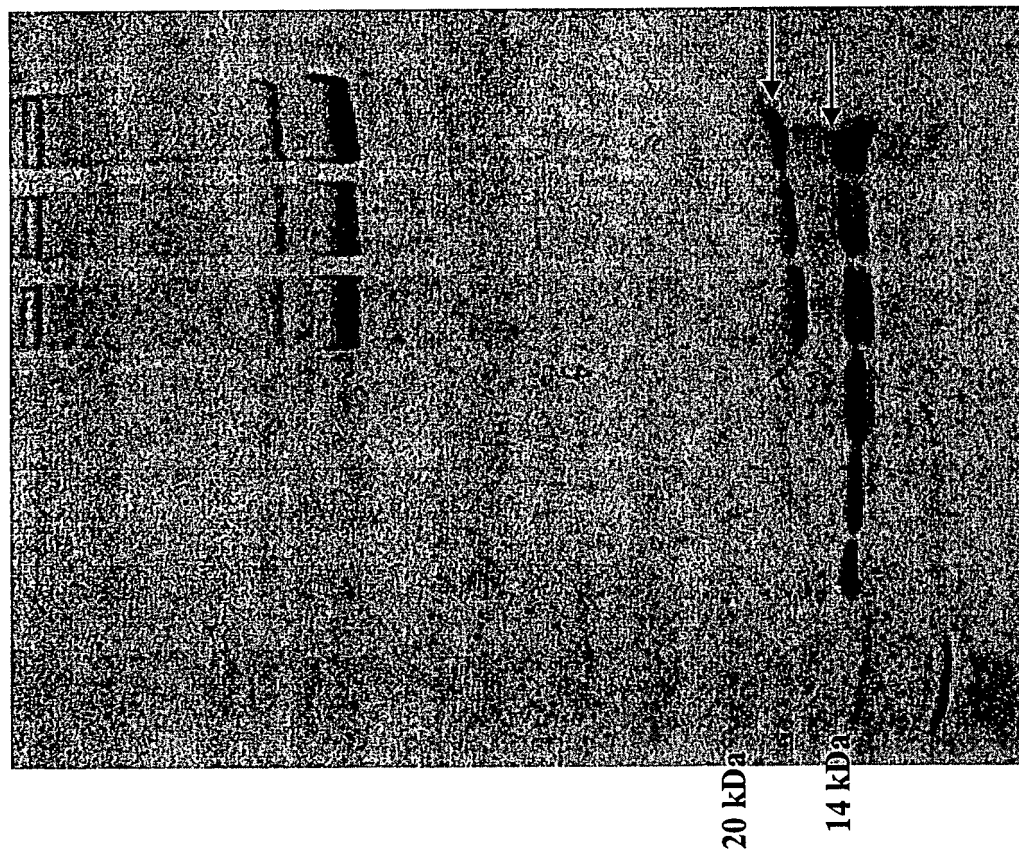
126K 183K 30K hCP  
SP-E SP-1  
early  
hCP



early  
hCP

Fig. 3.

schematic



1. Marker
2. (+) BoLys - 1 µg
3. (+) BoLys - 2 µg
4. (+) BoLys - 5 µg
5. Nb-1 GJ - 2 µl
6. Nb-2 GJ - 2 µl
7. Nb-3 GJ - 2 µl

TMV coat protein  
bolys

**Fig. 4**

# 14% Tris-Glycine SDS-PAGE gel

1. Marker
2. (+) Hen EW lys 5  $\mu$ g
3. (+) BoLys - 1  $\mu$ g
4. (+) Boys - 2  $\mu$ g
5. (+) BoLys - 3.5  $\mu$ g
6. (+) BoLys - 5  $\mu$ g
7. (+) BoLys - 7  $\mu$ g
8. 1051500 IF crude - 1  $\mu$ l
9. 1051500 IF crude - 5  $\mu$ l
10. 1051100 IF crude - 1  $\mu$ l
11. 1051100 IF crude - 5  $\mu$ l
12. Marker

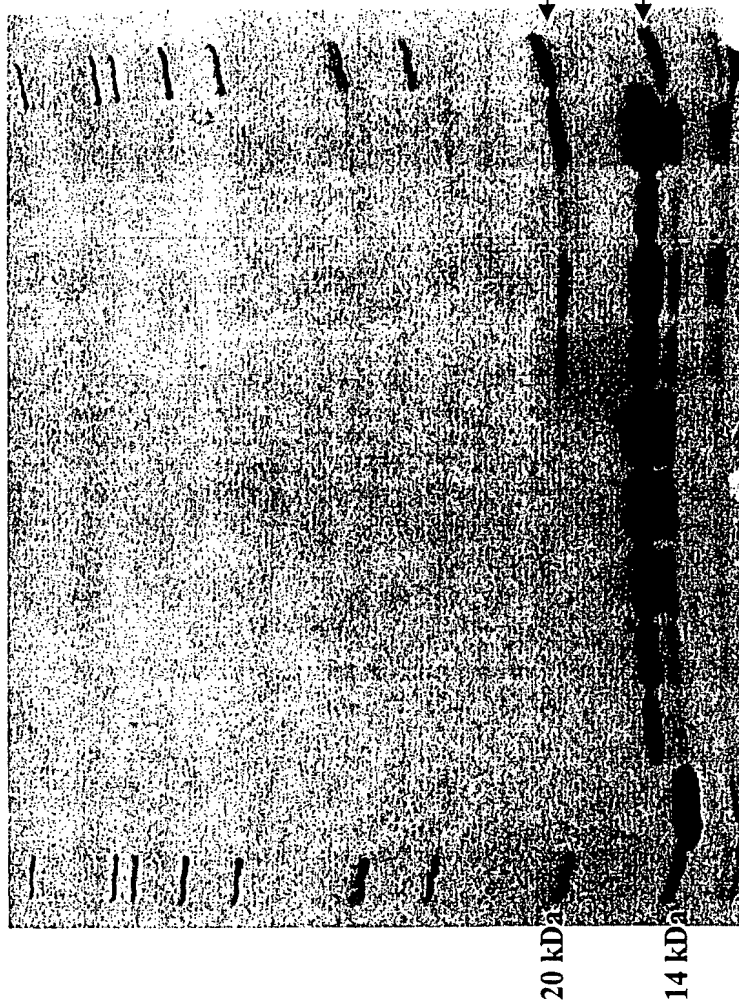


Fig. 5



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Laser : 2350  
Scans Averaged: 62  
Pressure: 1.07e-07  
Low Mass Gate: 1000.0  
Timed Ion Selector: 24.9 OFF  
Negative Ions: OFF  
Collected: 4/3/2000 5:13 PM

Method: HCD-80K  
Mode: Linear  
Accelerating Voltage: 25000  
Grid Voltage: 90.000 %  
Guide Wire Voltage: 0.100 %  
Delay: 300 ON  
Sample: 44

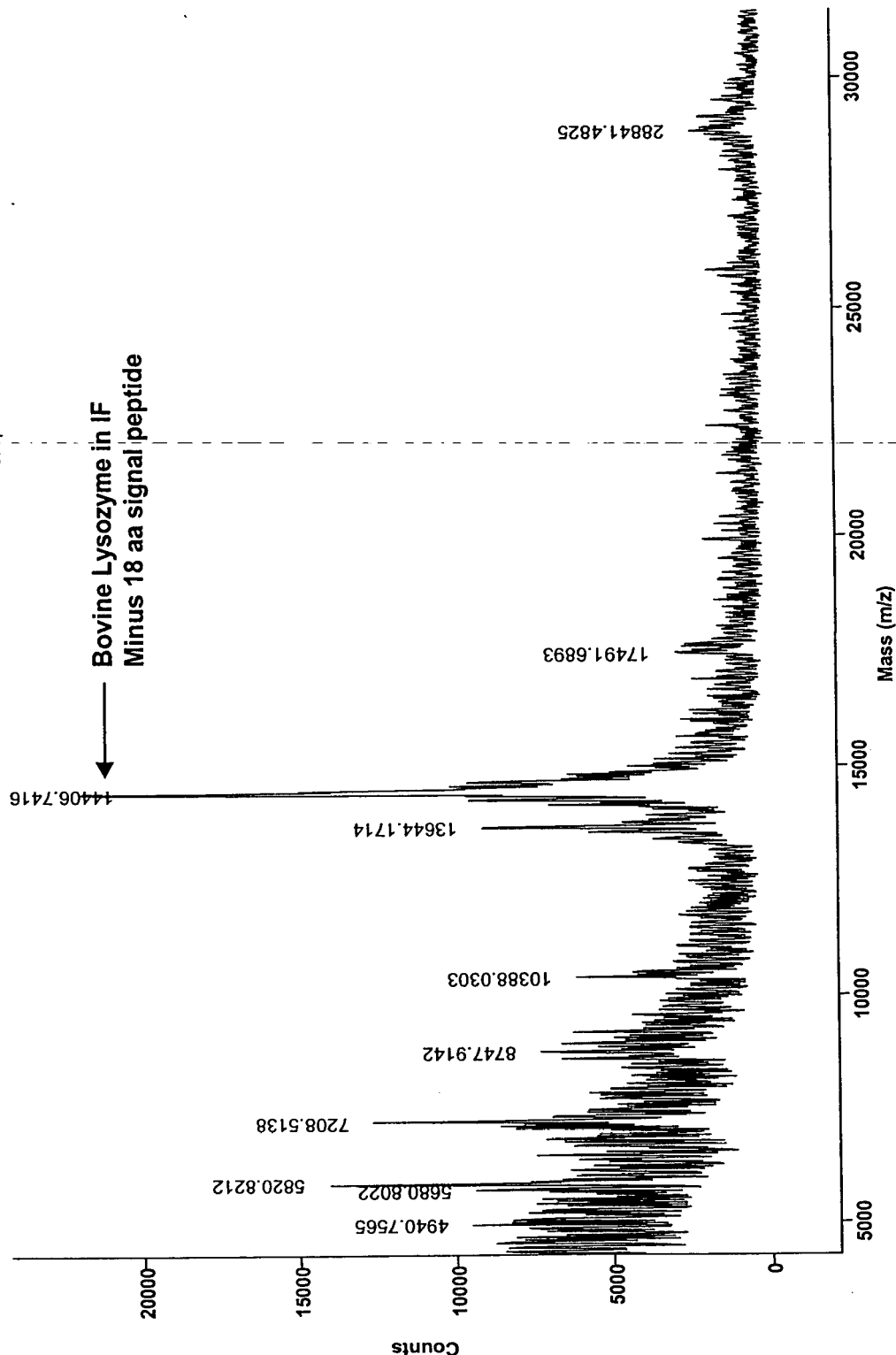


Fig. 6

3K vs. Standard (Turbidimetric)

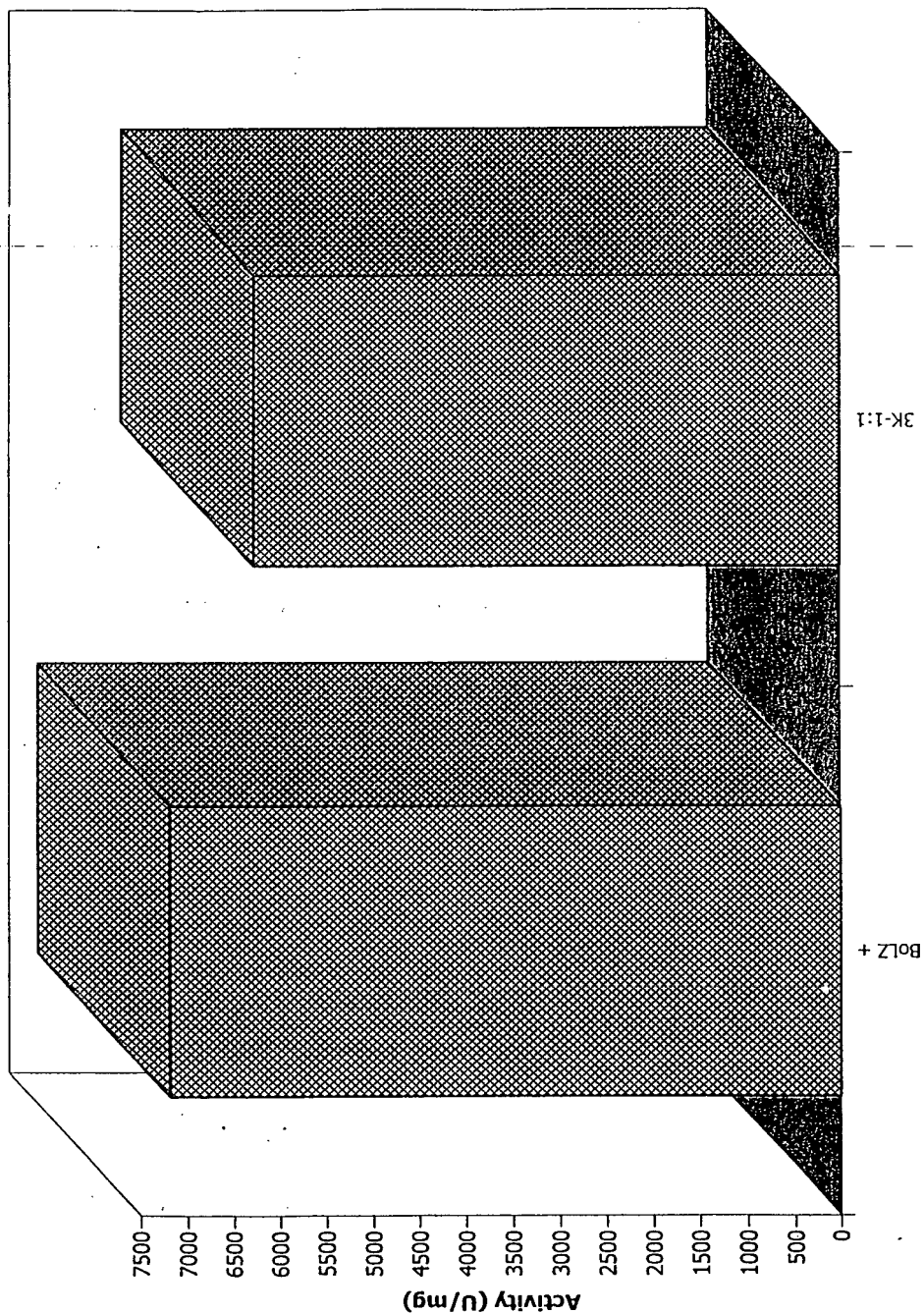
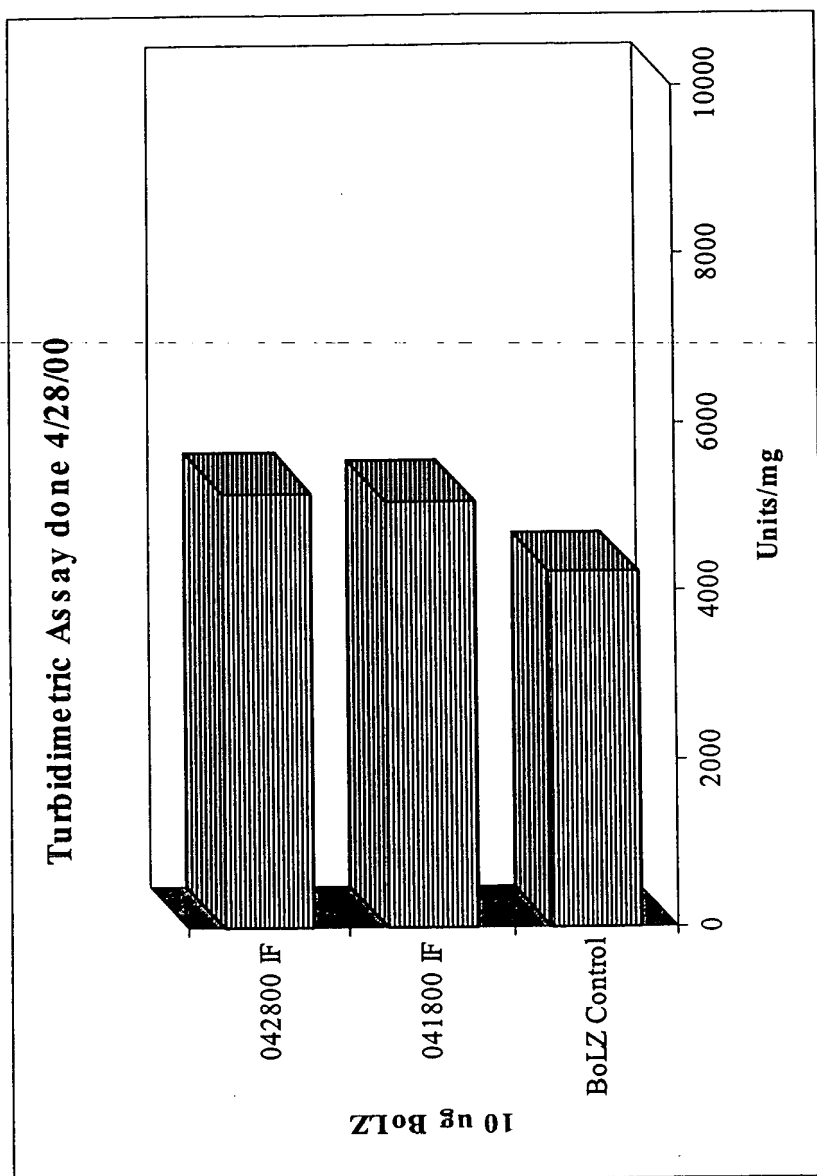
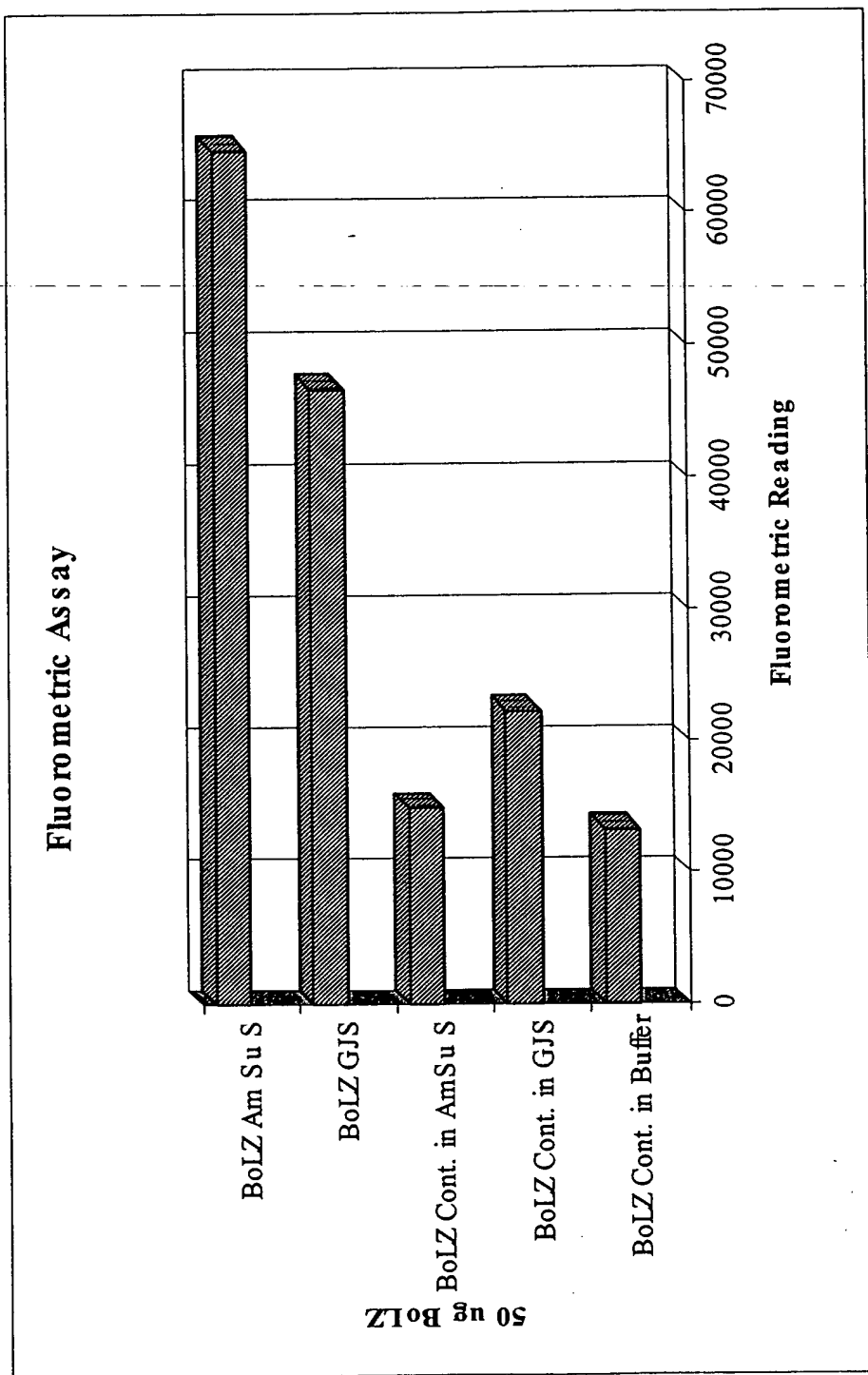


Fig. 7

042800 IF 041800 IF BoLZ Control



**Fig. 8**



**Fig. 9**

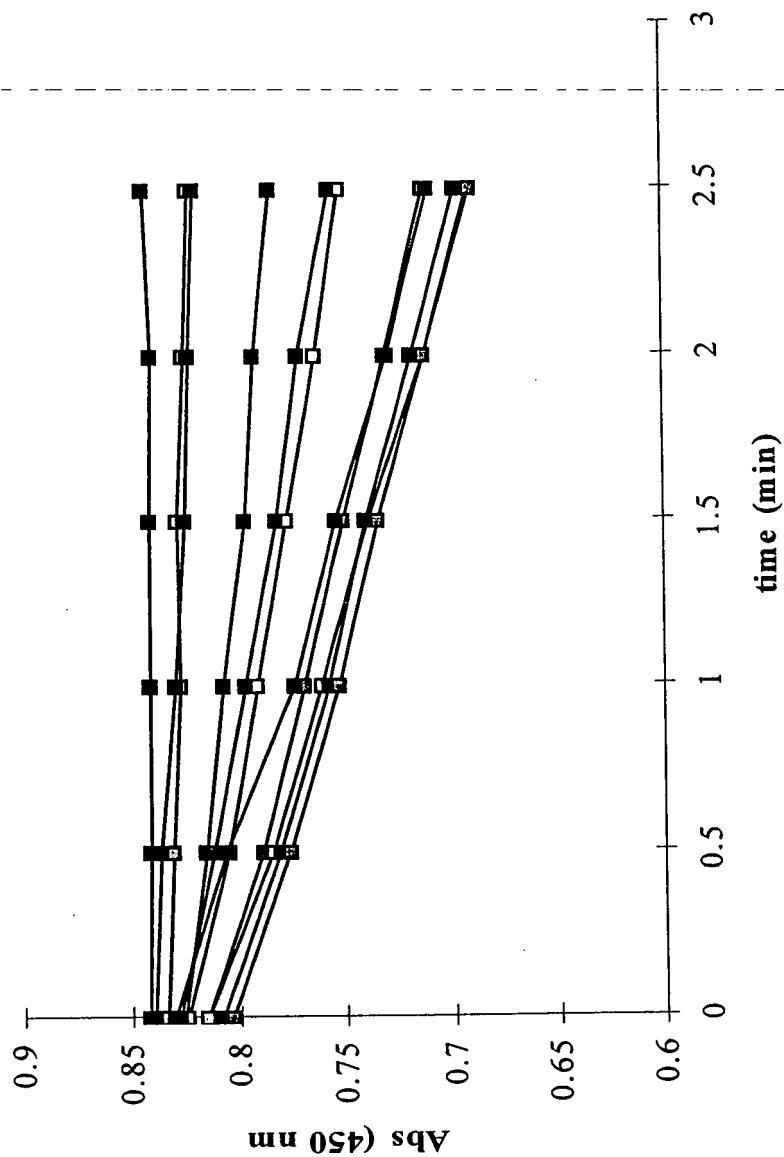


Fig. 10